

# ADJUSTABLE SLIDING GUIDES

# ASG

## MANUFACTURED AS PER EXPANSION JOINTS ASSOCIATION EJMA STANDARD

All of us have gotten accustomed to using Spider Pipe Guides because they have been around forever. In looking for a better way, we found the following areas for improvement:

1. There is no single Spider Guide for any pipe size. The ID is standard, but the length of the guide fins and the ID of the housing all vary with insulation thickness. There can be as many as five selections for the same diameter pipe.

This makes stocking difficult and the contractor cannot buy without knowing the insulation thickness.

2. While they are used in other positions, most Spider Guides have no allowable load ratings as they are single purpose Guides.

Our primary objective was to solve these two problems, so we came up with the idea of a simple insulation height adjustment. Just loosen two bolts on each side of the base and move to the higher position when job requirements call for thicker insulation. Not only are they easier to order and dimension, but the price remains the same regardless of insulation thickness. This is not true with the spider design as cost is based on the shell OD. Cost estimates are no longer difficult with our single price per size.

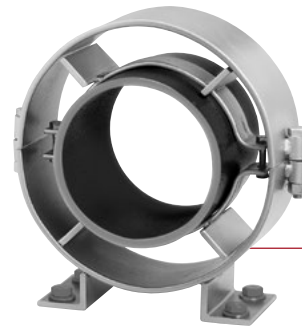
The next problem was addressed by our design team of Professional Engineers. The rating in any guide position is at least the support value required for the maximum unsupported length of piping. According to code, maximum hanger spacing for a 2" pipe is every 10 ft whereas a 12" line goes out to as much as 23 ft. In most installations it is just easier to locate all supports at 10 ft spacing, but our designs allow for the longer criteria as shown in the table on page 10•57.

In addition to the published support values, you will find that most of the base plates have a multitude of holes. This is very helpful as you do not always know how they are going to be installed. The large centered hole is for bolting to concrete, the close holes off the center line are for bolting through the flanges of beams. The wider spread is used when there is a steel surface wide enough to take advantage of that spacing.

Travel is another major concern. All of our guides have travel at least equal to standard Spider Guides and many considerably more without going to special designs.

Our installation instructions tell the installer how to best position the guide to accommodate maximum or limited travel. Excessive friction or galling is another major concern. Internal parts in Spider Guides are generally sheared and welded to the inner clamp at 90° intervals. No matter how carefully the installer tries, there are still sharp edges that cut into the outer housing. Rather than just sliding, you may have to overcome gall. They show no concern about rust deterioration as everything is just painted carbon steel.

In our new design, both the sliding foot and the interior of the outside guides are wrapped or lined in Stainless Steel as illustrated. There can be little or no corrosion, and the force needed to move the guide is minimal as compared to sharp-edged carbon steel configurations.



**Typical Spider Pipe Guide**

(See page 10•62 for details)

ASG Guides are most commonly installed with their base plates bolted down. However, they can be used as guides for horizontal runs when bolted to walls or columns or for overhead runs when bolted to ceilings or overhead steel. Check Anchorage Capacity on page 10•56, when bolting to ceilings.

If support is provided by other means such as rollers, guide spacing would be based on guidance spacing requirements rather than loadings.

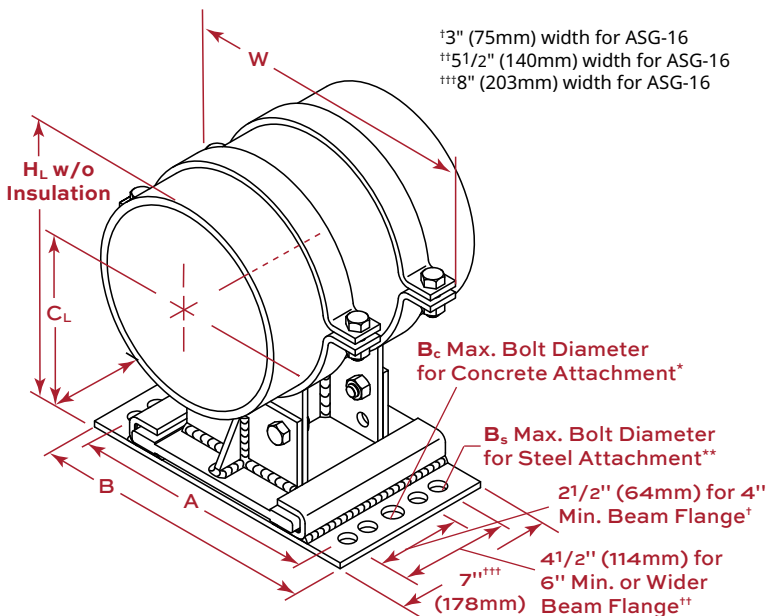
### GUIDES AS SUPPORTS

Most guide manufacturers publish no guide support strength information because their guides are designed for the single purpose of maintaining alignment. When the guides are spaced properly for that single purpose, forces are small and housing strength is seldom an issue.

In many applications there can be a major savings in using the guide as a support rather than just a guide in all horizontal runs. For example, if we were supporting 23 feet of 12" piping weighing 4000 lb on ASG Guides only and the Guide ratings show acceptance of the load in that position, there is no need for another support. ASG frictional coefficient is about 0.30, so 1200 lb (0.30 x 4000 lb) would have to be added to the appropriate anchor loading. Friction is usually a very small proportion of anchor loading.

### ASG Dimensions

Always install in Lower Position when Pipe is not insulated or when Insulation Thickness does not exceed the Lower Position Maximum Insulation Thickness shown in the table below. For Overall Height, add Insulation Thickness to  $H_L$  or  $H_U$ .



\*Use two bolts for concrete attachment.  
\*\*Use four bolts for steel attachment. Use inner holes for narrow steel flange widths or outer holes for wider flanges.

#### Combined Movement

Sizes 3/4" thru 2 1/2" (20 thru 65mm) - 4" (102mm)  
 Sizes 3" thru 16" (80 thru 400mm) - 6" (152mm)

Total Combined Movement is the sum of Expansion and Contraction. i.e., 6" (152mm) Movement comprises 4" (102mm) Expansion and 2" (51mm) Contraction.

#### B<sub>C</sub> BOLT DIAMETER FOR CONCRETE ATTACHMENT

ASG Size (in)	ASG Size (mm)	Diameter (in)	Diameter (mm)
3/4 - 3	20 - 80	1/2	13
4 - 6	100 - 150	5/8	16
8 - 14	200 - 350	3/4	20
16	400	1	25

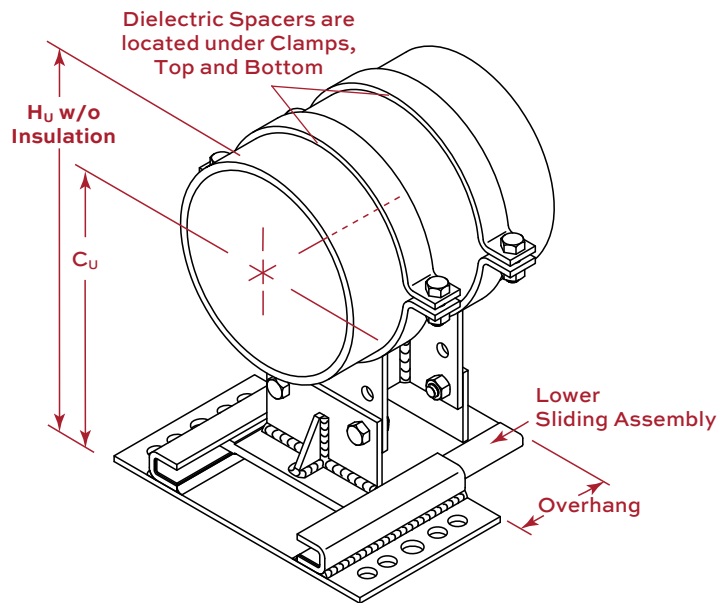
#### B<sub>S</sub> BOLT DIAMETER FOR STEEL ATTACHMENT

ASG Size (in)	ASG Size (mm)	Diameter (in)	Diameter (mm)
3/4 - 3	20 - 80	3/8	10
4 - 6	100 - 150	1/2	13
8 - 14	200 - 350	5/8	16
16	400	3/4	20

#### ASG LOWER POSITION C<sub>L</sub> & H<sub>L</sub> SIZES 3/4" TO 16" (20 TO 400mm) FOR 2 1/2" (64mm) INSULATION MAXIMUM

Type	Pipe Size (in)	Pipe Size (mm)	Cl Pipe Height (in)	Cl Pipe Height (mm)	Overall Height w/o Insulation (in)	Overall Height w/o Insulation (mm)	Maximum Insulation Thickness Lower Position (in)	Maximum Insulation Thickness Lower Position (mm)
ASG-	3/4	20	33/4	95	41/2	114	2	51
	1	25	41/8	105	5	127	2	51
	1 1/4	32	43/8	111	53/8	137	2	51
	1 1/2	40	41/2	114	55/8	143	2	51
	2	50	43/4	121	61/8	156	2	51
	2 1/2	65	5	127	65/8	168	2	51
	3	80	53/8	137	71/4	184	2 1/2	65
	4	100	65/8	168	9	229	2 1/2	65
	5	125	71/8	181	10 1/16	255	2 1/2	65
	6	150	75/8	194	11 1/8	283	2 1/2	65
	8	200	9	229	13 1/2	343	2 1/2	65
	10	250	10 3/4	273	16 1/4	413	2 1/2	65
	12	300	11 7/8	302	18 3/4	476	2 1/2	65
	14	350	12 5/8	321	20	508	2 1/2	65
	16	400	13 7/8	352	22 1/4	565	2 1/2	65

In copper or brass water or steam systems, Dielectric Spacers supplied by Mason must be used to prevent corrosion from galvanic action. These simple lead strips are installed between our steel clamps and the copper or brass piping, top and bottom.



#### TYPE ASG DIMENSIONS

Type	Pipe Size (in)	Pipe Size (mm)	A (in)	A (mm)	B (in)	B (mm)	W (in)	W (mm)
ASG-	3/4	20	5 1/2	140	6 3/4	172	3 1/4	83
	1	25	6	152	7 1/4	184	3 5/8	92
	1 1/4	32	6	152	7 1/4	184	4	102
	1 1/2	40	6	152	7 1/4	184	4 1/4	108
	2	50	6	152	7 1/4	184	4 3/4	121
	2 1/2	65	6	152	7 1/4	184	5 1/4	133
	3	80	6 1/2	164	7 3/4	196	6	152
	4	100	7 1/4	184	8 1/2	216	7 1/4	184
	5	125	8	204	9 1/4	235	8 1/2	216
	6	150	8 3/4	222	10	254	9 1/2	240
	8	200	10 1/2	267	12 1/4	311	11 3/4	298
	10	250	11 1/2	292	13 1/4	337	14 5/8	372
	12	300	13	330	14 3/4	375	16 3/4	426
	14	350	16	406	17 3/4	451	18 1/8	460
	16	400	18 1/2	470	20 1/2	521	20 1/2	521

#### ASG UPPER POSITION C<sub>U</sub> & H<sub>U</sub> SIZES 1" TO 16" (25 TO 400mm) FOR 3" TO 4" (76 TO 102mm) INSULATION

Type	Pipe Size (in)	Pipe Size (mm)	C <sub>U</sub> Pipe Height (in)	C <sub>U</sub> Pipe Height (mm)	Overall Height w/o Insulation (in)	Overall Height w/o Insulation (mm)	Maximum Insulation Thickness Upper Position (in)	Maximum Insulation Thickness Upper Position (mm)
ASG-	3/4	20	33/4	95	41/2	114	2	51
	1	25	51/8	130	6	152	3	76
	1 1/4	32	53/8	137	63/8	162	3	76
	1 1/2	40	51/2	140	65/8	168	3	76
	2	50	53/4	146	71/2	181	3	76
	2 1/2	65	6	152	75/8	194	3	76
	3	80	63/8	162	81/4	210	3	76
	4	100	81/8	206	10 1/2	267	4	102
	5	125	85/8	219	11 9/16	294	4	102
	6	150	91/8	232	12 5/8	321	4	102
	8	200	10 1/2	267	15	381	4	102
	10	250	12 1/4	311	17 3/4	451	4	102
	12	300	13 3/8	340	20 1/4	514	4	102
	14	350	14 1/8	359	21 1/2	546	4	102
	16	400	15 3/8	391	23 3/4	603	4	102

SIZES 18, 20 & 24 ARE ALSO IN STOCK. CONSULT FACTORY FOR MORE INFORMATION. NOTE: 3/4" (20mm) size cannot be raised.



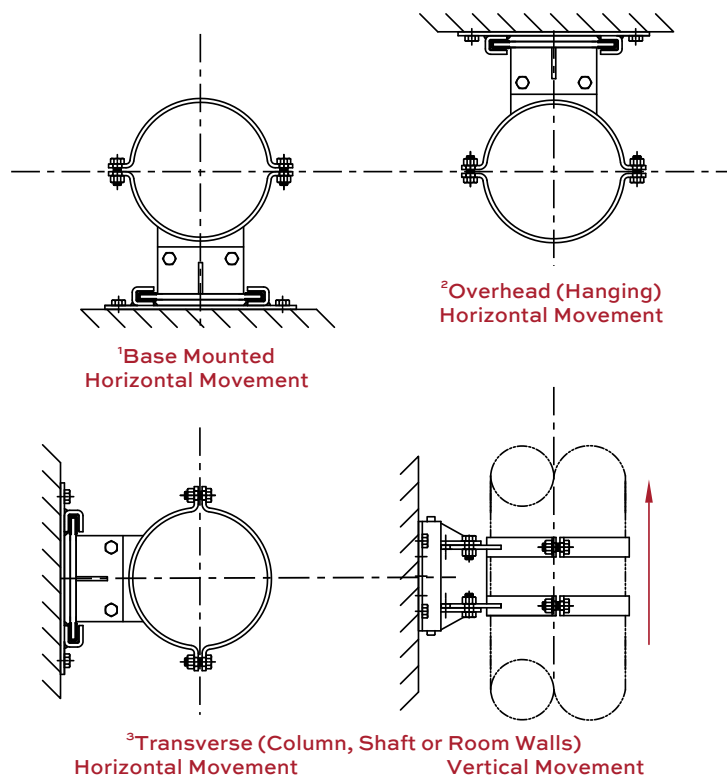
ASG LOAD RATINGS

ASG Pipe Size (in) (mm)	<sup>1</sup> Rated Base Mounted Pipe Load* (lb) (kg)		<sup>2</sup> Rated Hanging Pipe Load** (lb) (kg)		<sup>3</sup> Rated Transverse Pipe Load* (lb) (kg)		Normal Guide Spacing if Used as Only Support (ft) (m)		Normal Guide Load if Used as Only Support (lb) (kg)		Maximum Guide Spacing if Used as Only Support** (ft) (m)		Maximum Guide Load if Used as Only Support (lb) (kg)		Standard Weight Carbon Steel Pipe with Water & Insulation (lb/ft) (kg/m)	
3/4 20	1200	544	1200	544	750	340	5	1.5	10	4.5	7	2.1	14	6.4	2.0	3.0
1 25	1200	544	1200	544	750	340	5	1.5	12	5.4	7	2.1	17	7.7	2.4	3.6
1 1/4 32	1200	544	1200	544	750	340	5	1.5	16	7.3	7	2.1	23	10.4	3.3	4.9
1 1/2 40	1200	544	1200	544	750	340	8	2.4	32	14.5	9	2.7	36	16.3	4.0	6.0
2 50	1200	544	1200	544	750	340	10	3.0	56	25.4	10	3.0	56	25.4	5.6	8.3
2 1/2 65	1200	544	1200	544	750	340	10	3.0	86	39.0	11	3.5	95	43.0	8.4	12.5
3 80	1850	839	1700	771	1000	454	10	3.0	114	51.7	12	3.7	137	62.1	11.4	17.0
4 100	1900	862	1800	816	1050	476	10	3.0	169	76.7	14	4.3	237	108.0	16.9	25.2
5 125	1925	873	1830	830	1100	499	10	3.0	251	113.9	16	4.9	402	183.0	25.1	37.4
6 150	1950	885	1950	885	1300	590	10	3.0	330	149.7	17	5.2	561	255.0	33.0	49.1
8 200	3050	1383	2775	1259	1850	839	10	3.0	530	240.4	19	5.8	1007	457.0	53.0	78.9
10 250	5550	2517	4350	1973	2750	1247	10	3.0	774	351.0	22	6.7	1703	772.0	77.4	115.2
12 300	5600	2540	5600	2540	3950	1792	10	3.0	1060	480.8	23	7.0	2438	1105.0	106.0	157.8
14 350	7000	3175	7000	3175	5500	2495	10	3.0	1180	535.3	25	7.6	3050	1383.5	118.0	175.6
16 400	8800	3992	8800	3992	7300	3311	10	3.0	1450	657.7	27	8.2	4050	1837.0	145.0	215.8

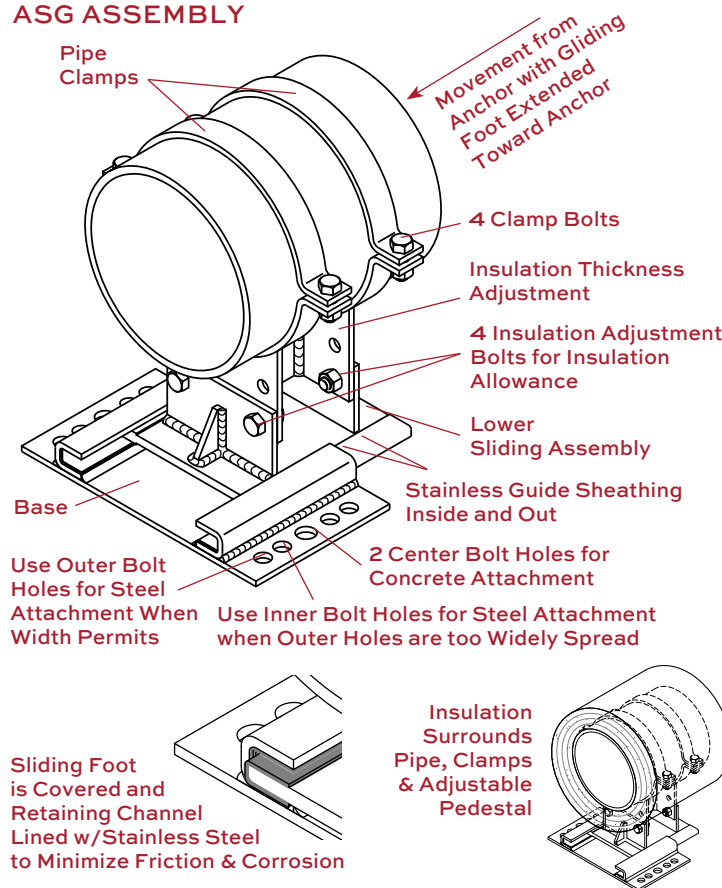
\*All Safety Factors meet or exceed 5.

\*\*Manufacturers Standardization Society (MSS-SP-69) maximum spacing for standard weight carbon steel pipe with water and insulation.

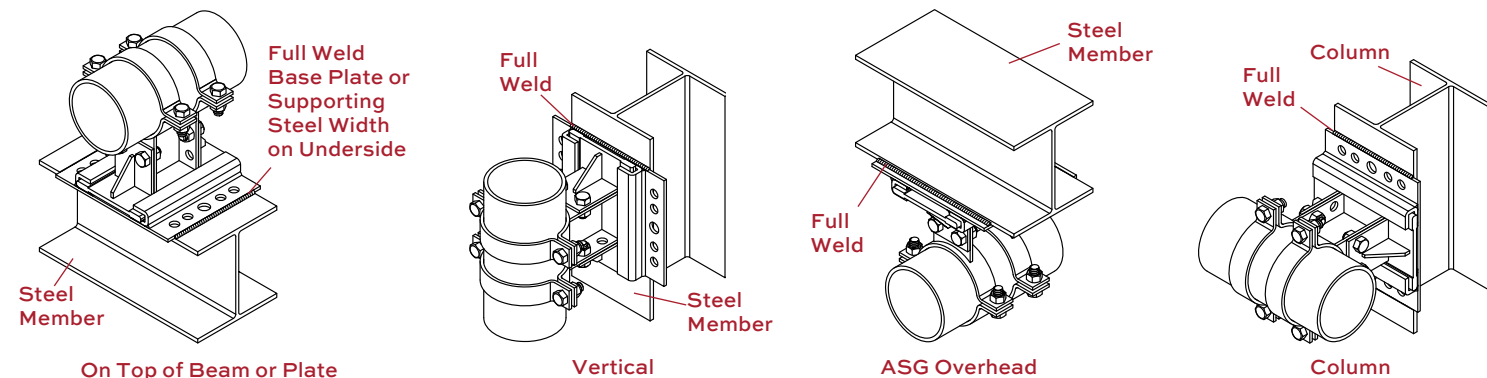
ALL MODE ASG INSTALLATION POSITIONS



ASG ASSEMBLY



ASG WELDED POSITIONS & WELD LOCATIONS

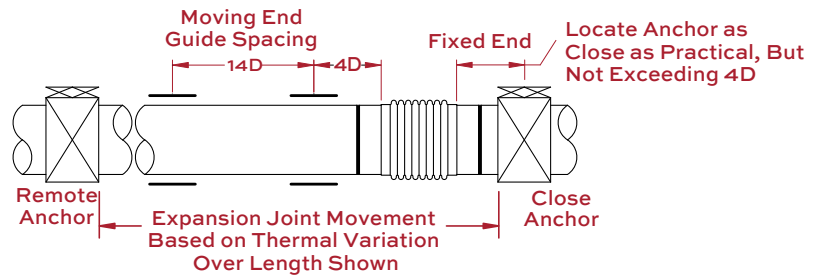


**PIPE GUIDES & GUIDING**

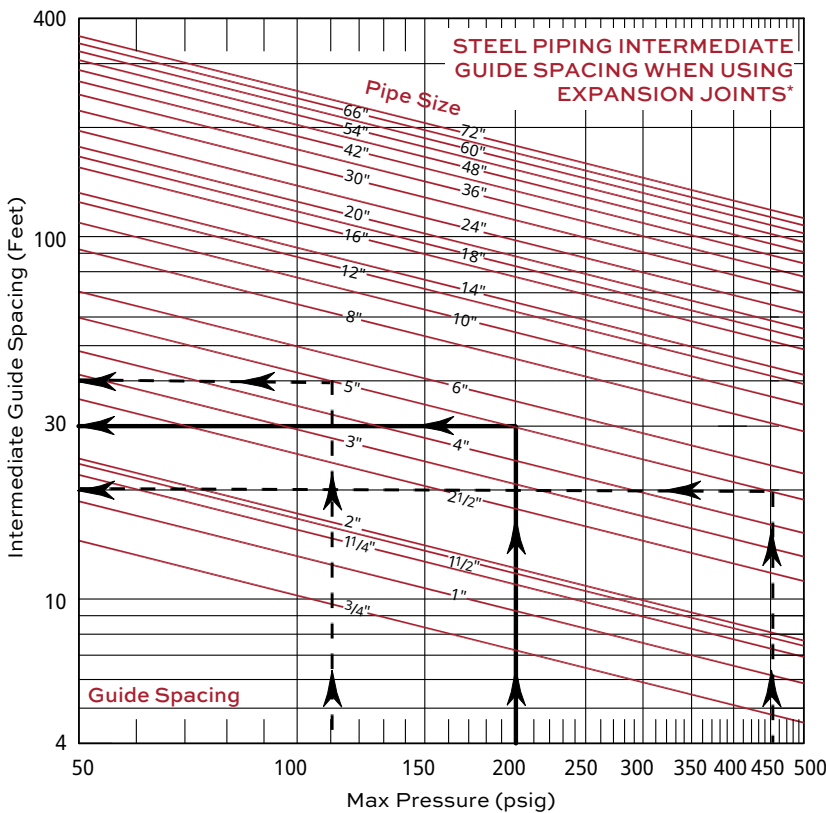
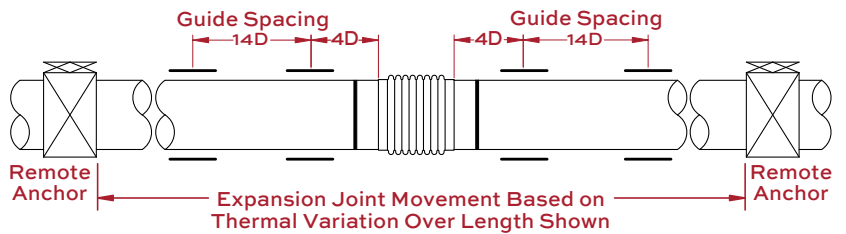
Correct alignment of pipe as provided by guides is vital for the proper performance and life of an Expansion Joint. Pipe expansion joints will apply compressive loads to the pipe line, which may cause pipe to buckle when not properly guided. Buckling can be caused by the spring constant or resistance of the expansion joint, plus the pressure thrust from the expansion joint. Proper pipe guiding near an expansion joint starts with locating the first guide within 4 diameters of the expansion joint, and the second guide within 14 diameters of the first guide. For long runs of pipe, additional guides may be needed to prevent buckling as determined by the Intermediate Guide Spacing Chart shown below. Note that as the pressure increases, the intermediate guide spacing decreases because of the increased buckling force.

**GUIDE SPACING – REFERENCING PIPE DIAMETER “D”**

**GUIDES & ANCHORS FOR JOINT LOCATED NEAR ANCHOR**



**GUIDES & ANCHORS FOR JOINT LOCATED BETWEEN REMOTE ANCHORS**



In addition to the locations of the anchors and guides to protect expansion joints and control movements as shown above, there are often long lengths of pipe between anchors or guides that would buckle like overloaded columns.

Checking the Intermediate Guide Spacing Chart will show when additional Guides are needed.

To use the Chart, select the maximum pressure and move up to intersection with the red Pipe Size line. Follow horizontally all the way to the left and read maximum guide spacing.

**FOR EXAMPLE:**

- A 5" 200 psi steel line must be guided every 30 ft to prevent buckling when expansion joints are used.
- At 110 psi the Guide Spacing would increase to 40 ft.
- At 450 psi it would drop to 20 ft.

\*Contact factory for increased allowable spacing when using Vee's.

**SPECIFICATION**

Pipe guides shall be manufactured with stainless steel wrapping the carbon steel foot where it passes through horizontal U guides similarly lined to prevent corrosion. The base plate shall have multiple holes for bolting to beam flanges or flat surfaces. Bases may be welded in position in lieu of bolting. Height must be adjustable to accept different thicknesses of insulation.

Guides shall be professionally load rated for bottom, overhead, side mounted or riser positioning to provide both load bearing and guiding capabilities. Submittals shall include load ratings in all modes. Guides shall be Type **ASG** as manufactured by Mason Industries, Inc.



# ADJUSTABLE SLIDING GUIDES

## INSTALLATION INSTRUCTIONS

### INSTALLATION PROCEDURES

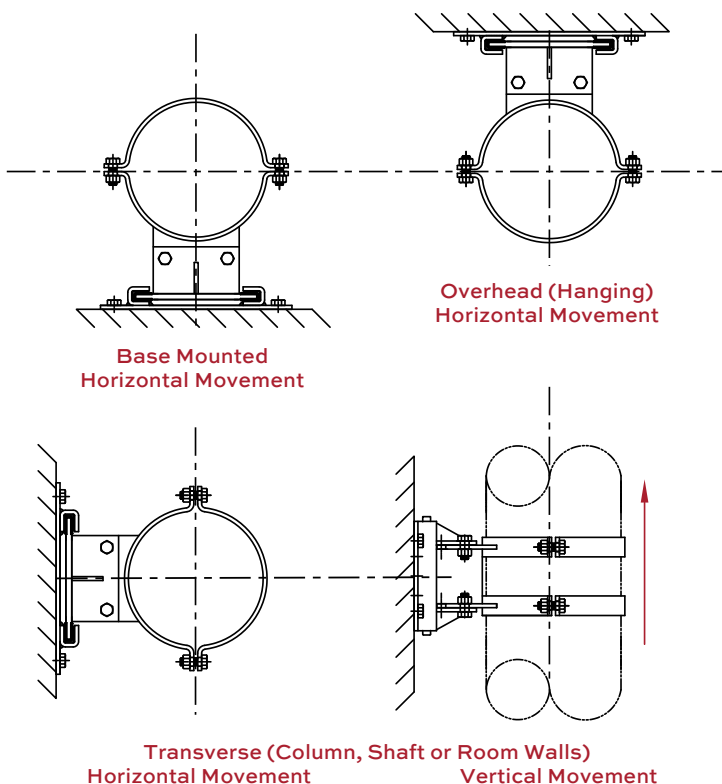
1. Determine ASG locations from the pipe expansion design drawings. Mounting surfaces must be level and free of debris.
2. ASGs can be installed prior to or after pipe installation. The base can be bolted down or attached to walls, shafts or overhead (see typical mounting configurations below).
3. a. When installing ASGs prior to pipe installation, set base to mounting surface. Base mounted installations can be attached to structure after pipe is in place. Secure ASGs base plate to structure using steel bolts, expansion anchors, or welding. Use the four outer or four inner bolt holes for steel attachments or the two center holes for concrete. See assembly drawing below and page 10•56 for bolt hole locations and diameters. Bolt material and finish must comply with project specifications. If welding, see page 10•56 for base plate welding details.

Remove upper pipe clamps and install sliding section by inserting into channels of base assembly. Sliding assembly for ASG sizes 1" (25mm) to 16" (400mm) are shipped in the lower position. Raise upper sliding assembly to accommodate thicker insulation (see page 10•62 for details).

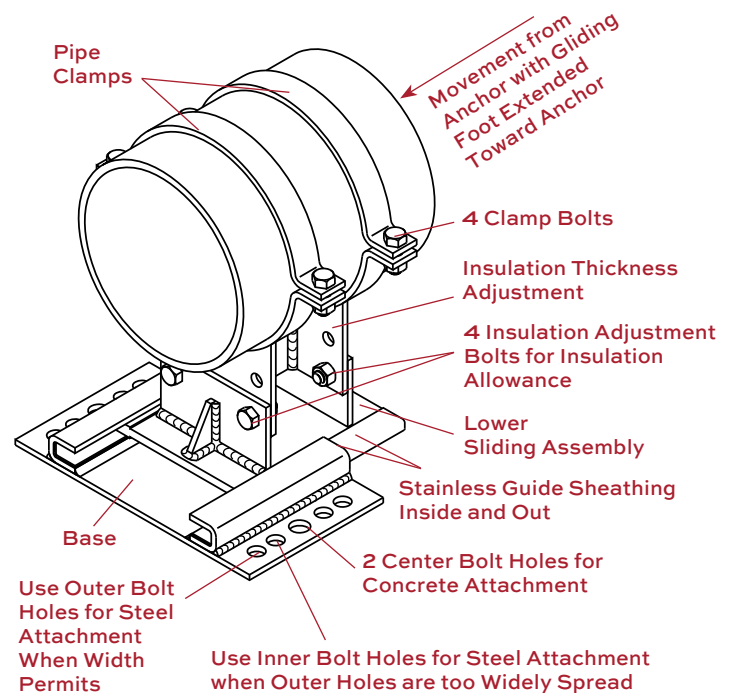
To raise ASG, remove the four Insulation Adjustment Bolts. Raise upper section to next set of holes, replace bolts, and tighten. Wall or overhead installations will require pipe to be temporarily supported until secured by upper clamps.

3. b. If installing ASG after pipe is in place, remove upper clamps and install base and sliding assembly between pipe and structure. Wall and overhead installations will require base to be attached to mounting surface at this time as stated in step 3a. Also see step 3a for raising sliding section and base assembly attachment instructions. NOTE: Sliding section for 3/4" (20mm) ASG comes in one piece and cannot be raised.
4. If installing copper pipe, install Mason dielectric spacers between pipe and pipe clamps.
5. Position ASG for anticipated movements by moving the sliding assembly overhang as shown on page 10•61 before tightening clamps.
6. Install insulation over pipe and ASG as shown on page 10•62. Cover insulation as per project specifications.

### ALL MODE ASG INSTALLATION POSITIONS



### ASG ASSEMBLY

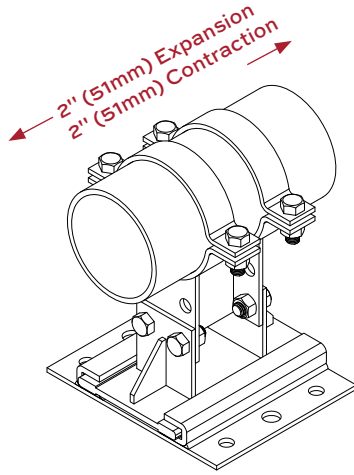


### Base Plate Positions for Various Pipe Movements

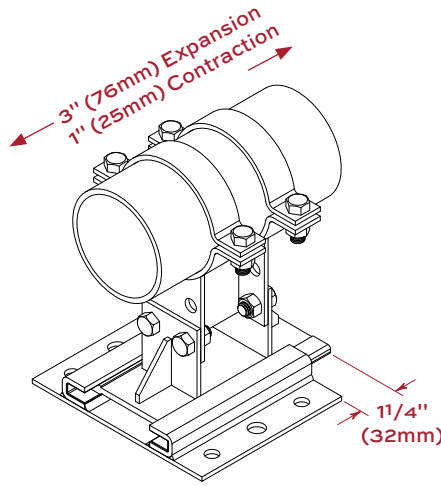
Set Base Plate Extension for Required Movement Before Tightening Clamps

#### PIPE SIZES 3/4" (20mm) to 2 1/2" (65mm)

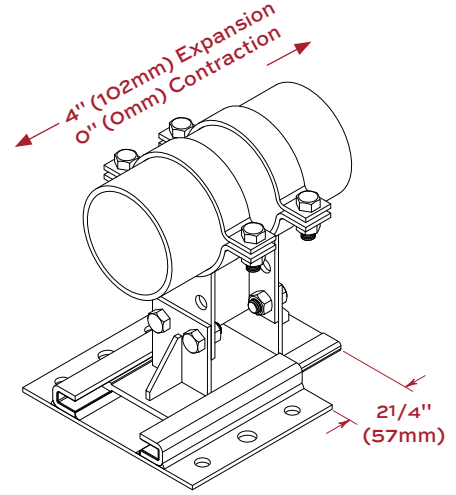
(4" (102mm) TOTAL MOVEMENT)



Centered



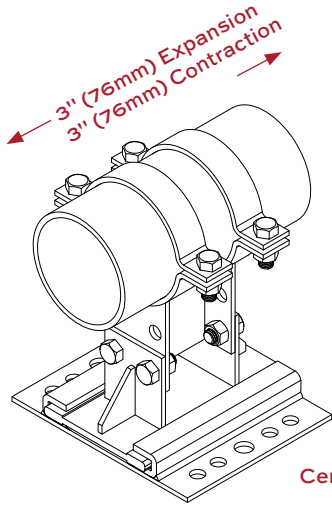
Set 1 1/4" (32mm) Overhang



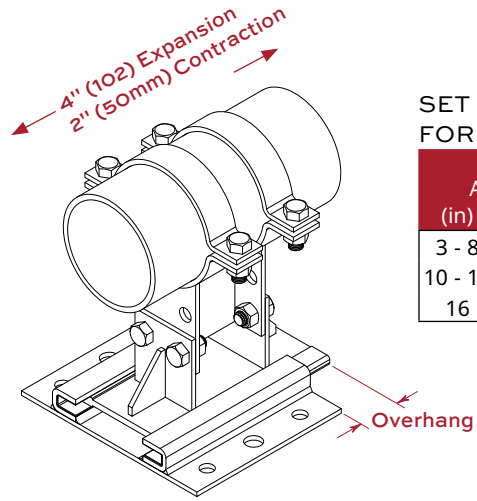
2 1/4" (57mm) Preset

#### PIPE SIZES 3" (80mm) to 16" (400mm)

(6" (152mm) TOTAL MOVEMENT)

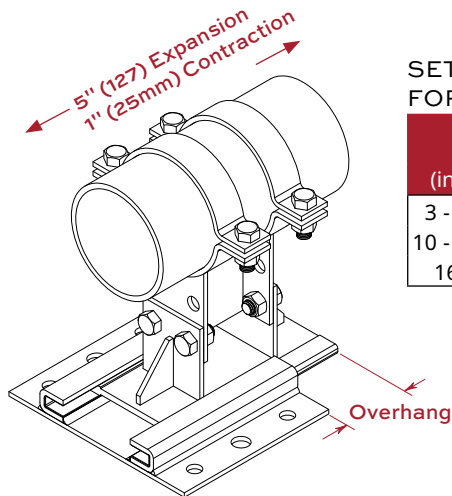


Centered



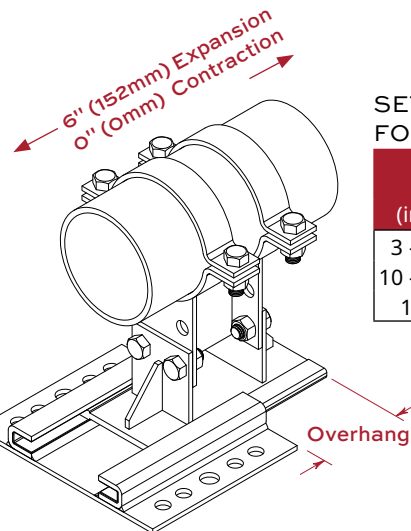
SET OVERHANG FOR ASG SIZE

ASG Size (in)	ASG Size (mm)	Overhang (in)	Overhang (mm)
3 - 8	80 - 200	1 1/4	32
10 - 14	250 - 350	2 1/4	58
16	400	3/4	19



SET OVERHANG FOR ASG SIZE

ASG Size (in)	ASG Size (mm)	Overhang (in)	Overhang (mm)
3 - 8	80 - 200	2 1/4	58
10 - 14	250 - 350	3 1/4	83
16	400	2 3/4	70



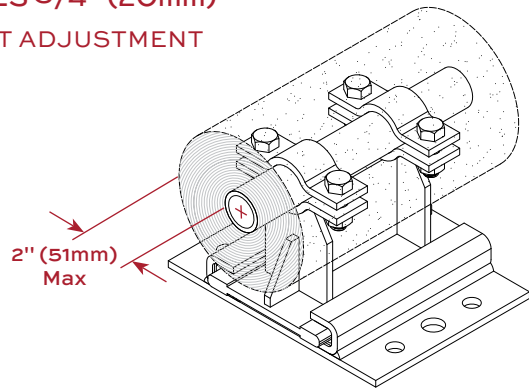
SET OVERHANG FOR ASG SIZE

ASG Size (in)	ASG Size (mm)	Overhang (in)	Overhang (mm)
3 - 8	80 - 200	3 1/4	83
10 - 14	250 - 350	4 1/4	108
16	400	3 3/4	95

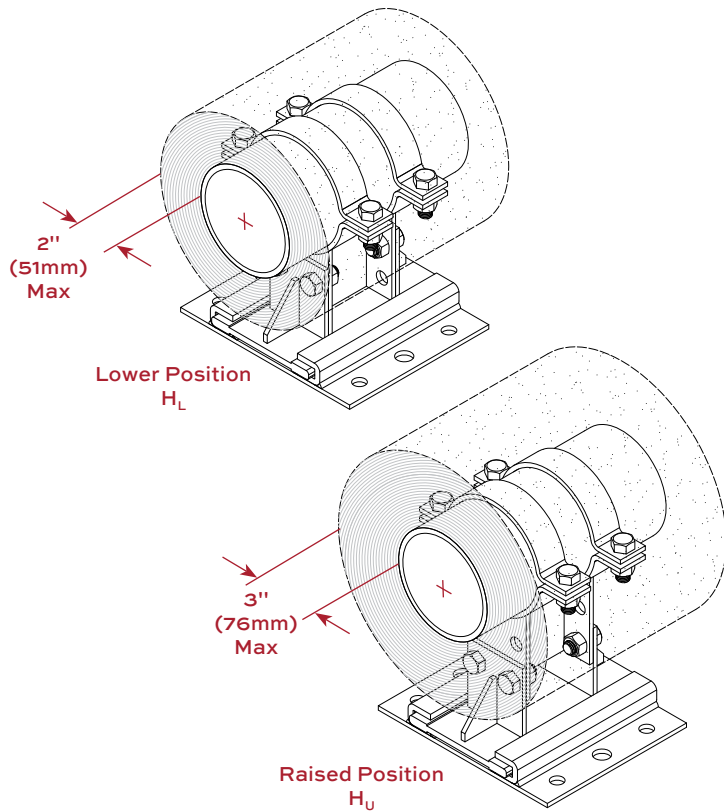
### Settings for Insulation Thickness

PIPE SIZES 3/4" (20mm)

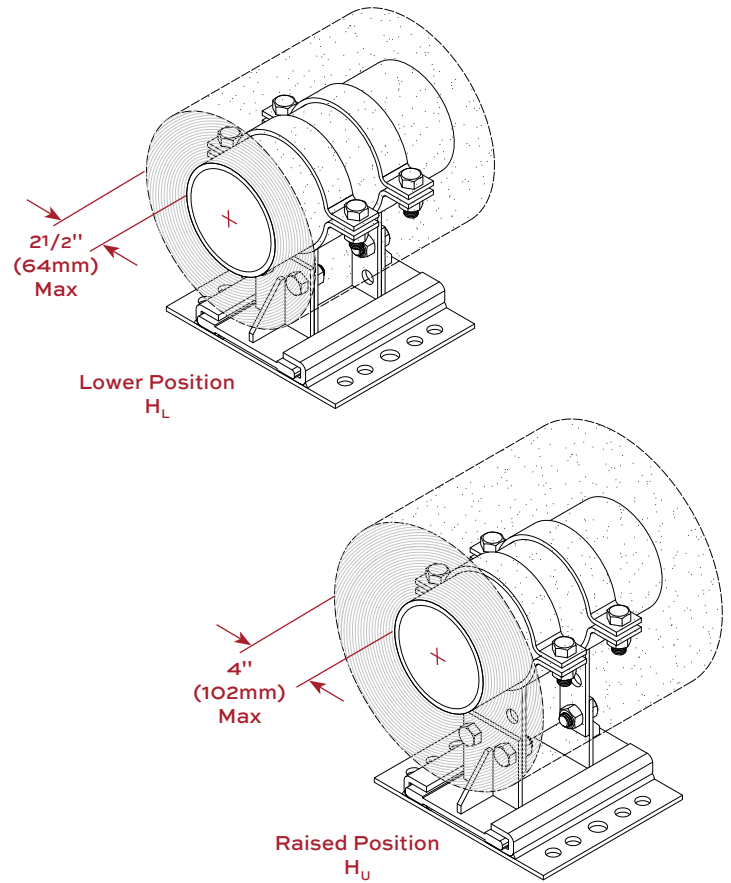
NO HEIGHT ADJUSTMENT



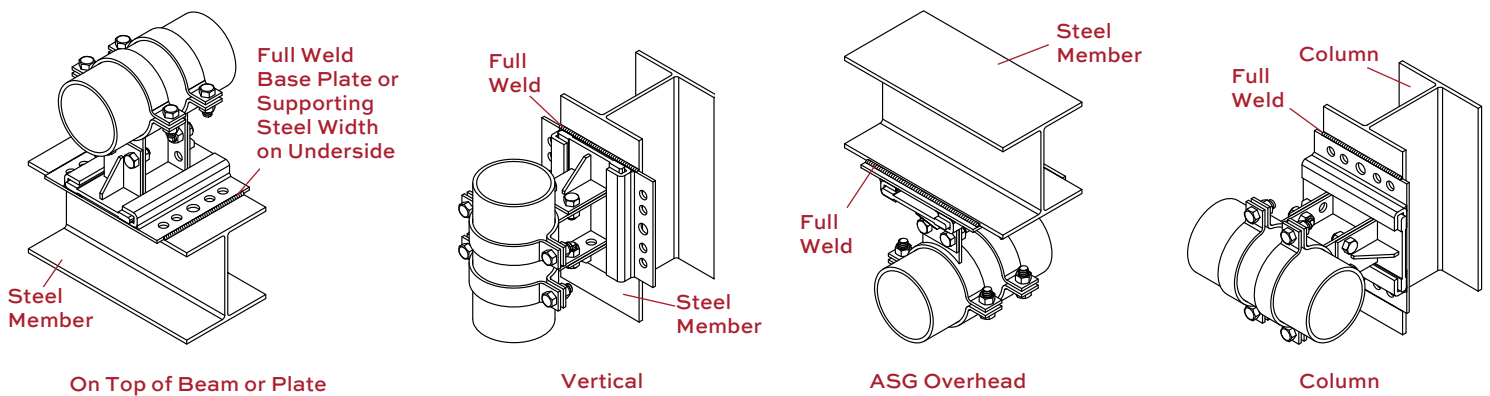
PIPE SIZES 1" (25mm) to 2 1/2" (65mm)



PIPE SIZES 3" (80mm) to 16" (400mm)



### ASG WELDED POSITIONS & WELD LOCATIONS



# SPIDER PIPE GUIDES

**SPG**



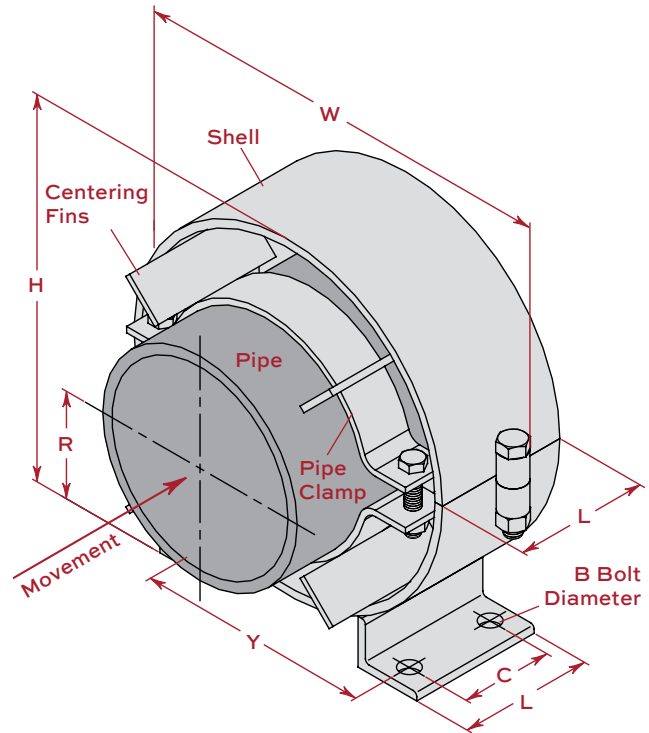
SPG SHELL SELECTION TABLE for  
4" (102mm), 6" (152mm) & 8" (203mm) MOVEMENT

Pipe Size (in) (mm)	Shell Code Letters								Max. Standard Mvmt. ± (in) (mm)
	Insulation Thickness								
	1" 25mm	1 1/2" 32mm	2" 50mm	2 1/2" 65mm	3" 80mm	3 1/2" 90mm	4" 100mm		
1/2 15	AA	AA	BB	DD	DD	DD	EE	EE	4 102
3/4 20	AA	BB	CC	DD	DD	EE	EE	EE	4 102
1 25	AA	BB	CC	DD	DD	EE	EE	EE	4 102
1 1/4 32	AA	BB	CC	DD	DD	EE	EE	EE	4 102
1 1/2 40	BB	BB	CC	DD	DD	EE	EE	EE	4 102
2 50	BB	CC	DD	DD	EE	EE	FF	FF	4 102
2 1/2 65	CC	CC	DD	DD	EE	EE	FF	FF	4 102
3 80	CC	DD	DD	EE	EE	FF	FF	FF	4 102
4 100	DD	DD	EE	EE	FF	FF	GG	GG	6 152
5 125	EE	EE	FF	FF	GG	GG	HH	HH	6 152
6 150	EE	EE	FF	FF	GG	HH	HH	HH	6 152
8 200	FF	FF	GG	HH	HH	JJ	JJ	JJ	6 152
10 250	HH	HH	HH	JJ	JJ	KK	KK	KK	6 152
12 300	JJ	JJ	JJ	KK	KK	LL	LL	LL	8 203
14 350	KK	KK	KK	KK	LL	LL	MM	MM	8 203
16 400	LL	LL	LL	LL	MM	MM	NN	NN	8 203
18 450	MM	MM	MM	MM	NN	NN	NN	NN	8 203
20 500	NN	NN	NN	NN	PP	PP	PP	PP	8 203
24 600	PP	PP	PP	PP	—	—	—	—	8 203

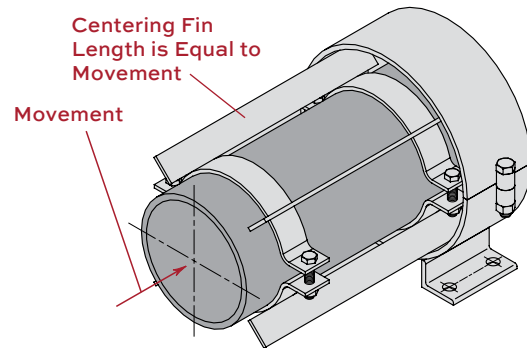
\*Centering Fin length is equal to the Maximum Standard Movement.  
Non-standard movements are available.

TYPE SPG DIMENSIONS

Type	Shell Code	H (in) (mm)	R (in) (mm)	W (in) (mm)	Y (in) (mm)	B (in) (mm)	C (in) (mm)	L (in) (mm)
SPG-	AA	57/8 149	31/2 90	61/8 156	41/8 104	5/8 16	13/4 44	3 76
	BB	63/4 171	4 102	71/8 181	43/8 111	5/8 16	13/4 44	3 76
	CC	75/8 194	43/8 111	81/8 206	51/8 130	5/8 16	13/4 44	3 76
	DD	91/4 235	51/4 133	101/8 257	61/8 156	5/8 16	13/4 44	3 76
	EE	115/8 295	61/4 159	121/8 308	7 178	5/8 16	23/4 70	4 102
	FF	133/8 340	7 178	141/8 360	81/4 210	5/8 16	23/4 70	4 102
	GG	151/8 384	77/8 200	161/8 410	97/8 251	3/4 19	4 102	6 152
	HH	17 432	87/8 225	181/8 460	107/8 276	3/4 19	4 102	6 152
	JJ	183/4 476	93/4 248	201/8 511	117/8 302	3/4 19	4 102	6 152
	KK	21 533	107/8 276	221/8 562	113/4 298	3/4 19	6 152	8 203
	LL	231/8 587	121/8 308	241/8 613	141/2 368	7/8 22	6 152	8 203
	MM	25 635	13 330	261/8 664	151/2 394	7/8 22	6 152	8 203
	NN	273/4 705	143/4 375	281/8 714	171/8 435	11/8 22	6 152	8 203
	PP	311/2 800	161/2 419	321/8 816	191/4 489	11/8 22	6 152	8 203



Typical AA Through FF One Clamp Configuration



Typical GG Through PP Two Clamp Configuration

